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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,124	11/21/2003	Eric Holzle	50561/002001	1123
21559	7590	10/16/2009		
CLARK & ELBING LLP 101 FEDERAL STREET BOSTON, MA 02110			EXAMINER NEGIN, RUSSELL SCOTT	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentadministrator@clarkelbing.com

Office Action Summary	Application No. 10/707,124	Applicant(s) HOLZLE, ERIC	
	Examiner RUSSELL S. NEGIN	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2009 and 15 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-10 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-10 and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/13/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Comments

Applicants' amendments and request for reconsideration in the communication filed on 13 May 2009 and 15 June 2009 are acknowledged and the amendments are entered

Claims 7-10 and 13-16 are pending and examined in the instant Office action.

Information disclosure statement

The information disclosure statement filed by applicant on 13 May 2009 has been considered.

Withdrawn Rejections

The rejections of claims 7-8 and 13-14 under 35 U.S.C. 103(a) as being unpatentable over Jacob et al. [Nature Genetics, February 2002, volume 30, pages 175-179; on previous 892 form] in view of Copley [New Scientist, volume 171, no 2304, page 15, August 18, 2001; on previous 892 form] are withdrawn in view of amendments filed to the instant setoff claims on 15 June 2009.

The rejections of claim 9-10, and 15-16 under 35 U.S.C. 103(a) as being unpatentable over Jacob et al. in view of Copley as applied above, in further view of Wedekind et al. [Proc. R. Soc. London B, 1995, volume 260, pages 245-249] are withdrawn in view of amendments filed to the instant set of claims on 15 June 2009.

Claim Rejections - 35 USC § 101

The following rejection is reiterated:

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7-10 and 15-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 7-10 and 15-16 are drawn to a method for matching partner seeking humans in a dating service.

This rejection is in line with the recent decision in *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008). In the instant case, claims 7-10 and 15-16 are drawn to a method. In order for a claim to provide a practical application, the claim **must meet** the machine-or-transformation test in order to be eligible under 35 USC 101 as statutory subject matter (*In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008)). In other words, the prohibition on patenting abstract ideas has two distinct aspects: (1) when an abstract concept has no claimed practical application, it is not patentable; (2) while an abstract concept **may have a practical application**, a claim reciting an algorithm or abstract idea can state statutory subject matter only if it is embodied in, operates on, transforms, or otherwise is tied to another class of statutory subject matter under 35 U.S.C. §101 (i.e. a machine, manufacture, or composition of matter). (*Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673, 1972), as clarified in *In re*

Bilski, 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008) the test for a method claim is whether the claimed method is (1) tied to a particular machine or apparatus or (2) transforms a particular article to a different state or thing.

In the instant case, while the instant claims recite “partnering” humans, the act of partnering does not result in a physical transformation of the human (i.e. the human remains the same human before and after the partnering).

Further, the method claims 7-10 and 15-16 are not so tied to another statutory class of invention because the **method** steps that are critical to the invention are “not tied to any **particular apparatus** or **machine**” and therefore do not meet the machine-or-transformation test as set forth in *In re Bilski* 545 F.3d 943, 88 USPQ2d 1385 (Federal Circuit, 2008).

It is noted that instant claim 14 is statutory because it recites a step of physical transformation; i.e. genotyping obtained genetic samples.

Response to arguments:

Applicant's arguments filed 13 May 2009 have been fully considered but they are not persuasive.

Applicant argues on page 4 of the Remarks that since the amended form of claim 7 requires “physically” partnering humans, claim 7 now requires a physical transformation. This argument is not persuasive because partnering humans does not physically alter or transform the humans in question; the human is just partnered with another human.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following rejections are newly applied and necessitated by amendment:

WRITTEN DESCRIPTION

Claims 7-10 and 13-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original specification, claims and drawing are silent with regard to the newly added limitation requiring "physical partnering." While the original claims, drawing, and specification repeatedly disclose matching humans and individuals, all three do not mention or teach the equivalent of physically partnering the humans or individuals. It is noted that "matching" is interpreted to have a distinct meaning than "partnering" in that while "matching" indicates identifying individuals, "partnering" indicates lining them up in pairs. There is no such teaching for a physical "line-up" in the original disclosure.

The following rejections are newly applied and necessitated by applicant's amendments:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. 103 Rejection #1:

Claims 7-8 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacob et al. [Nature Genetics, February 2002, volume 30, pages 175-179; on previous 892 form] in view of Copley [New Scientist, volume 171, no 2304, page 15, August 18, 2001; on previous 892 form] in view of Ober et al. [American Journal of Human Genetics, volume 61, 1997, pages 497-504] in view of Levine ["Pheromones: Potential participants in your sex life," obtained online at cnn.com; posted on 25 June 1999].

Claim 7 is drawn to a method of matching partner seeking humans in a dating service. The method comprises determining the MHC Class I and Class II genetic profiles of a plurality of the humans, thereby providing a plurality of profiled individuals. The method additionally comprises performing a plurality of comparisons between the profiles for a plurality of the humans, wherein a greater level of heterozygosity between a pair of profiled humans is indicative of a greater level of compatibility. The method additionally comprises matching the profiled individuals based on the level of

heterozygosity, thereby providing profile-matched humans. The method additionally comprises physically partnering at least one pair of the profile-matched humans into a social or potentially sexual group in a dating service.

The study of Jacob et al. teaches that paternally inherited HLA alleles are associated with women's choice of male odor.

The experiment of Jacob et al. exposes a group of female "smellers" to odors emitted by males in T-shirts; and matches the preferences of the female to that of the odor emitting male.

Figure 1 of Jacob et al. on page 176 profiles a plurality of MHC complex genetic profiles (i.e. HLA-A and HLA-B in the Class I region and HLA-DR in the Class II region) for the paternal and maternal haplotypes of both the smellers and donors (step 1 of claim 7).

The article ends on page 178 column 2 (before the methods) by stating:

Consistent with earlier studies, these data indicate that there is not one most preferred male odor for everyone, but that odor preference is relative, based in this case on the degree of LA differences between a man and a woman.

Consequently, this study shows that increased differences (i.e. heterozygosities) in HLA genes represent a preferred male odor for the females (i.e. level of compatibility-step 2 of claim 7).

Figure 1 of Jacob et al. illustrates matching and partnering of the smellers to the donors (steps 3 and 4 of claim 7).

However, Jacob et al. does not teach partnering at least one pair of profile matched HUMANS into a social or potentially sexual group in a dating service. It is

noted that in the absence of a definition of the term "dating service," this term is interpreted broadly to encompass the concept that any line-up of partners in groups is a form of a "dating services."

Taking this interpretation into account, the article "Love is in the air" of Copley teaches an electronic nose (an "E-Nose") that classifies the scents based on MHC codes to further understand how rodents mate based on scents. In this instance, each rodent is an individual and the E-nose is the dating service.

However, Copley only applied "E-Nose" to rodents and not humans. Copley even states in the penultimate paragraph in the article "The jury is still out on whether MHC smells affect our [humans'] choice in partners."

The article of Ober et al. sheds light on this "jury" by studying HLA and mate choice in humans. Specifically, the summary of Ober et al. teaches statistically that humans are analogous to rodents in their preference of dissimilar HLA haplotypes scents in their mates.

However, while Jacob et al., Copley and Ober et al. demonstrate that attraction to individuals with complementary odors is analogous in humans and rodents, none of these citations teach or suggest physically partnering humans based on odor.

The article of Levine studies the role of pheromones (i.e. hormones with odor) in sex lives of humans. Specifically, the last paragraph of Levine suggests that the odors of pheromones affect the partnering and sexual activity between pairs of humans.

Claim 8 is further limiting wherein said comparisons are performed for all of said humans.

Figure 1 of Jacob et al. shows the comparisons for all participating individuals.

Claim 13-14 is further limiting wherein the determining comprises obtaining the samples from the plurality of humans and typing sample genetic material obtained from said plurality of humans to determine said individuals' MHC Class I and Class II profiles.

The final paragraph in column 1 of page 179 of Jacob et al. before the Acknowledgements ("HLA typing and scoring") describes that odor donors and subjects were typed for HLA-A, -B, -C, and -DR antigens by serology, and -DBQ1 alleles using molecular techniques. This HLA typing profiles both MHC Classes I and II as some of the above loci are on the MHC Class I region (i.e. HLA-A), while others are on the MHC Class II region (i.e. HLA-DBQ1).

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the MHC matching of Jacob et al. by use of the E-nose to classify matings based on scent in Copley wherein the motivation would have been that the electronic nose of Copley has the advantage of acting as a more electronic and automated system for identifying matching scents as in the manual system of Jacob et al. [see, for example, the first three sentences of Copley] It would have been further obvious to modify the MHC matching of Jacob et al., and the electronic nose of Copley by use of the statistical analysis of human mate choice in humans because it is obvious

to combine known elements in the prior art to yield a predictable result. In this instance, the application of MHC matching in humans is an alternate form of matching than in rodents. It would have been further obvious to apply the studies of Jacob et al., Copley, and Ober et al. to physically partnering humans as in Levine because it is obvious to combine known elements in the art to yield a predictable result. In this instance, the pheromones taught in Levine are an alternate chemical that affects the attraction and partnering of humans based on scent. There would have been a reasonable expectation of success in applying the e-nose for rodents of Copley to the manual and human scenting system of Jacob et al. because, as Ober et al. demonstrates, all of the scents are related to MHC complexes are independent of whether the species of animal is rodent or human (i.e. the heterozygous pairing of mates based on MHC is analogous in humans and rodents). There would have been a further reasonable expectation of success in combining Levine with Copley, Jacob et al., and Ober et al. wherein the motivation would have been that all of the studies analogously use odor to affect mating or partnering in individuals.

Response to Arguments:

Applicant's arguments filed 13 May 2009 have been fully considered but they are not persuasive.

Applicant argues that the amendments narrowing the claimed invention to be directed toward humans overcomes the rejection. However, in view of the teaching in Ober et al. that the mechanism for using scent to choose mates is analogous in humans

and rodents, the new combination of references in the instant rejection teaches all of the limitations of the instantly amended claims.

35 U.S.C. 103 Rejection #2:

Claim 9-10, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacob et al. in view of Copley in view of Ober et al. in view of Levine as applied to claims 7-8 and 13-14 above, in further view of Wedekind et al. [Proc. R. Soc. London B, 1995, volume 260, pages 245-249.]

Claim 9 is further limiting wherein one of the said profiles includes the DRB1 locus of the class II region of the MHC complex.

Claim 10 is further limiting wherein compatibility of the humans is also determined using other processes.

Claims 15-16 are further limiting wherein at least one pair of said profile matched humans is physically partnered into a social group and potentially sexual group in a dating service, respectively.

Jacob et al., Copley, Ober et al., and Levine make obvious the matching of human partners based on odors using the DR gene, as discussed above. Jacob et al. also discloses in the first paragraph in column 1 on page 179 "Odor collection," documents that the set of odors obtained are not extraneous and offensive (i.e. participants of the study were told not to smoke.) Copley also discloses a social or potentially sexual group in a dating service.

However, Jacob fails to disclose the DRB1 gene or the matching process using "other processes."

The study of Wedekind et al. also investigates MHC-dependent mate preferences in humans using an analogous odor study to show that repulsion to similarity in MHC scents is a biological mechanism to prevent incest.

Wedekind et al. uses the DRB1 gene in column 2 on page 245 of the study to analyze similarities and differences in the MHC complexes.

Figure 4 on page 247 of Wedekind et al. teaches the "other" processes in determining matching by correlating preferential odors in a potential mate with odors of relatives (i.e. top of Figure 4) and odors of "ex-mates" (i.e. bottom of Figure 4). These comparisons do not involve genetic profiling.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the MHC matching study of Jacob et al., the dating service of Copley, and the human HLA matching study of Ober et al. and the pheromones of Levine by use of the MHC matching study using the DRB1 gene and the "other" comparisons of Wedekind et al. wherein the motivation would have been that Wedekind et al. explicitly undertakes the study with one of the purposes as to show biological mechanisms to prevent incest [see pages 245, column 1 of Wedekind et al.]

Response to Arguments:

Applicant's arguments filed 13 May 2009 have been fully considered but they are not persuasive.

Applicant argues that the reference of Wedekind et al. does not overcome the alleged deficiencies of the first 35 U.S.C. 103 rejection. This argument is not persuasive because the instant combination of references teaches all of the limitations of the instantly rejected claims.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices

published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)).
The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Marjorie Moran, Supervisory Patent Examiner, can be reached at (571) 272-0720.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/RSN/
Russell S. Negin
10 October 2009

/Marjorie Moran/
Supervisory Patent Examiner, Art Unit 1631